



U.S. Department of Energy Categorical Exclusion Determination Form



Program or Field Office: Office of Energy Efficiency and Renewable Energy:
Phase III Xlerator Program

Funding Opportunity Number DE-FOA-0000397

Applicant Name: Mikro Systems Inc.

Location: Charlottesville, VA

Project Title Rapid Commercialization of Advanced Turbine Blades for
Integrated Gasification Combined-Cycle Plants

Proposed Action or Project Description American Recovery and Reinvestment Act:

Mikro Systems, Inc., proposes a 3-year project to accelerate the commercialization of its advanced Tomo-Lithographic-Molding (TOMO) core production process through a complete development cycle for two distinct Integrated Gasification Combined-Cycle (IGCC) Row 1 turbine blades with an Original Equipment Manufacturer (OEM) partner - Siemens Energy. While Mikro's Commercialization Plan is for core production, the Phase III project would go from design through manufacture of "test set" blade quantities with TOMO cores. The goal is existing Row 1 blades for the Siemens SGT5-4000F engine and a replacement for this same blade with advanced cooling features. The DOE SBIR Phase 1 showed Mikro's TOMO process to be a valuable new approach to designing and fabricating cooling cores through: rapid prototyping; finer/more complex features, and potential for taking advanced core/blade designs into testable blades on a reduced time scale. The Phase I results provided a sound basis for the proposed Phase II work (pending) to apply TOMO to a beyond-state-of-the-art computational fluid dynamics (CFD) cooling core design. The key objectives of this 3-year effort would be: 1) fully mitigate quality, production volume, and foundry compatibility risks for applying TOMO to OEM blade manufacturing; 2) demonstrate seamless insertion of TOMO cores into the OEM blade production process utilizing existing foundry tooling for wax patterning, Q/A, and finishing; 3) achieve this for both a current engine OEM blade, and for the same blade with improved cooling design core; and 4) as in Phase I, show that this results in time and cost reductions for bringing advanced features to blades for the installed IGCC base and for new designs.

Conditions: None

Categorical Exclusion(s) Applied: B3.6, B5.1

*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 10 21

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

ORO NEPA Compliance Officer

James L. Elmore

Date Determined:

9/17/2010